result. Of this, however, some metal is always scattered in casting, and goes for practical purposes irretrievably into Ions, so that one can only reckon on about 95 per cent, output with an ideal pig and scrap process.

Although it very frequently happens that one can adjust the pig addition so exactly that the process can bo carried out to the end in the manner described, without aid, still it is not always possible. If it should be somewhat too small, tho bath cannot rightly attain the " boil," and spiegoleisen or pig iron must be further added according to the stillness of the bath. But this always indicates a not inconsiderable lengthening out of the process, and therefore it is sought throughout to avoid a too small pig iron charge, which works too " soft," or has as a result a " set " charge. Somewhat too much pig iron rather than too little is most preferably provided. In order to obUiu evidence as to the composition of the metal at the proper time, tests are taken from the bath during the " boil/* which arc investigated as to their decree of hardness by tho mechanical test methods. If thereby it is perceived that tho carbon content of the bath is higher than necessary, then tho process is accelerated by means of some shovelfuls of ore, which, added to a hot bath, cause a more violent boil, and an incivased elimination of carbon. In this manner, a small excess of reducing agents is rendered unharmful, without perceptible expenditure of time.

The process is rendered more difficult if tho scrap does not consist of pieces of desirable sizes. Very largo, massive* pieces melt with difficulty, and crops off ingots of largo section lie longer in the remaining molten metal before they completely melt down. Small-sized scrap admits of being worked with still more difficulty, and turnings especially sot up easily important conditions. If one introduces sueh-Hke material in large quantities into the furnace, tho upper layer fuses rapidly, but the fused portion sets again by sinking in the pile, and thereby the under-portion of the charge becomes a compact mass, which contains a whole quantity of occluded air, which, as a bad conductor of heat, renders tho entrance of heat more difficult, and considerably delays the melting down. Between whiles the carbon content of tho already